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The Future of Contactless Payments: A Comparative Study of Adoption Trends in Emerging Vs. Developed Markets.

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ABSTRACT

Modern financial transactions benefit from near-field communication and radio-frequency identification technologies which create contactless payment systems that speed up transactions while promoting security and better convenience. The behavior of adopting contactless payments differs extensively between developed countries and emerging economies because of their distinct infrastructure quality, regulatory standards, and consumer confidence levels. Emerging markets face multiple obstacles in their digital finance sector which stems from weak cybersecurity defenses and inconsistent regulations and insufficient technological capabilities. This systematic literature review examines the key drivers, barriers, and trends influencing contactless payment adoption across different economic contexts. Developed markets, such as the UK and Sweden, have achieved widespread adoption due to regulatory oversight and consumer confidence. In contrast, emerging markets, including India and Nigeria, rely on QR-based payment solutions for financial inclusion but contend with fraud risks, network instability, and weak cybersecurity protections. The Technology Acceptance Model (TAM) features in this review to study consumer actions while examining how users perceive system usefulness and how easily they use it to drive adoption patterns. The research supports developing official cybersecurity rules in addition to teaching people about money and strengthening digital networks to build safe payment systems that include everyone. Solving the mentioned problems will enhance digital financial inclusion and secure the durable expansion of contactless payments worldwide.

INTRODUCTION

Near Field Communication (NFC) and Radio Frequency Identification (RFID) technologies-based contactless payment systems have been revolutionizing financial transactions (Yang & Hancke, 2017). These systems improve payment efficiency and reduce the need of physical contact, reducing the time of transaction and ensuring security. This trend of using contactless payments, like any other, is in line with the global cashless economy trend as the result of technological advancement and changing consumer preferences (Ephraim, 2024). Emerging markets are not as ready to integrate contactless payments as much as developed markets due to their lack of technological development and regulatory barriers (Khando *et al.*, 2023). Contactless payments are beneficial but bring with them cybersecurity risks where NFC based transactions are concerned; therefore, effective risk mitigation is needed (Onumadu & Abroshan, 2024). To promote trust and encourage adoption in a wide variety of economic environments, such concerns must be addressed. The factors that drive growth of contactless payments are analyzed in comparison with emerging and developed markets. Advantages of the developed economies include robust digital infrastructure, strong regulatory frameworks, and high confidence of consumers on digital payments (Mogaji & Nguyen, 2024). However, emerging markets face challenges in the form of inadequate financial infrastructure, confusion in banking matters, and lower confidence in the services of digital financial mining (Khando *et al.*, 2023). It is critical to this comparison to find adaptable best practices. With more and more countries having mobile payments being a commonplace choice due to the bank access hurdle: it is imperative to understand the technological and socio-economical drivers of adoption (Chatterjee, 2024). These disparities allow stakeholders to work on targeted strategies for increasing the global financial inclusion. Most of the studies on digital payments have been conducted without taking into account comparative analysis of adoption trends across different economic context (Abdulai *et al.*, 2024). Additionally, these threats create challenges for adoption in these economies and, in fact, the economies are mostly emerging making the already complicated situation even more so (Onumadu & Abroshan, 2024).

Research Aim, Objectives, and Research Questions

Research Aim

This study aims to compare adoption trends in contactless payments between emerging and developed markets, identifying key drivers, barriers, and outcomes.

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Objectives

1. To assess the current adoption levels of contactless payments in both market types.
2. To analyze the technological, regulatory, and socio-economic factors influencing adoption.
3. To examine cybersecurity threats and their impact on user trust.
4. To provide policy recommendations for enhancing contactless payment adoption globally.

Research Questions

1. What are the key factors influencing contactless payment adoption in developed and emerging markets?
2. How do security and regulatory challenges affect adoption rates?
3. What strategies can enhance digital financial inclusion in emerging markets?

Scope of the Review

This systematic review analyzes peer-reviewed literature relating to contactless payment participation; this includes only recent publications. The review will then compare the experiences of developed economies like the U.S., U.K., EU countries with emerging economies like the India, Nigeria and Brazil. Using a synthesis of the two contexts, this will be able to provide actionable knowledge for financial institutions, policymakers, and technology providers to improve digital payment adoption in the rest of the world.

LITERATURE REVIEW

The advancement of contactless payment technologies has played a crucial part in the alterations of financial interactions, using Near Field Communication (NFC), Radio Frequency Identification (RFID), Quick Response (QR), and mobile wallet, and so on. However, emerging markets have embraced QR code-based transactions for financial inclusion (Mishra, Jha, & Gupta, 2024) because they are dependent on QR code-based transactions while developed economies have adopted NFC and mobile payment systems due to established digital infrastructures. Though these advances have narrowed the gap, security gaps, non-standardized regulations, and reluctance on the consumer side still slow the adoption of contactless payments on a global level.

Robust financial infrastructure and regulatory compliance have led the developed economies to rapidly adopt contactless payments. Countries like the UK and Sweden have almost universal adoption of mobile wallets and NFC cards as financial institutions are trusted and the cybersecurity is strong (Bezhovski, 2016). Unfortunately, the persistent threat of cybersecurity risks is that they lead to financial frauds and data breaches through the exploitation of the vulnerabilities in digital payment systems. With the integration of financial transactions into smart home ecosystems, concerns about unauthorized access to financial data have been raised, which calls for more strict security protocols (Harkai, 2024). Moreover, there are regulatory requirements like Europe's Payment Services Directive 2 (PSD2) aimed at improving security, but at the expense of business operation that is obliged to implement and comply with the multi factor authentication and data protection standards.

Mobile first adoption of digital payments has brought about rapid growth in emerging economies, specifically due to the involvement of the government in financial inclusion initiatives. With their low implementation cost and accessibility, QR code payments have become a popular option for small businesses and unbanked populations and have been adopted by them (Mohammed, 2025). India's Unified Payments Interface (UPI) is a case for a government-backed payment system in increasing the rate of digital transactions (Mishra *et al.*, 2024). However, there has been a progress yet only cybersecurity vulnerabilities continue to be a major concern. In several emerging markets, users face fraud, phishing attacks and identity theft (Oyewole *et al.*, 2024) because of the lack of standardized cybersecurity measures. Additionally, lack of uniform regulatory judgments in various jurisdictions renders the development of a secure and unbroken digital transaction mechanism difficult and building consumer confidence in Contactless payment systems is constrained. The makeup of the adoption of contactless payments depends on the consumer behavior. In developed markets, the winning market conditions of digital payments lead to adoption, particularly by younger demographics (Barroso & Laborda, 2022). Nevertheless, data privacy and cyberattack concern hindering widespread trust of these systems (Lathiya & Wang, 2021). On the other hand, in emerging economies, a strong chance for digital payment adoption still comes from a necessity, rather than preference. Mobile payments are a viable option to the traditional banking, due to financial constraints and lack of banking services. Despite these, consumer trust is negatively impacted such that frequent transaction failures, unreliable network infrastructure and fraudulent activities slow down adoption rates (Oyewole *et al.*, 2024). Addressing concerns in this area involves consumer awareness programs focused on the problem, and increased enforcement of cybersecurity.

However, there has been extensive research on contactless payments and a number of gaps still remain. While there are studies on adoption trends of cybersecurity threats, there is little research on how long-term cybersecurity threats affect consumer trust. Moreover, design of the emerging technologies such as blockchain and AI into secure digital payments also needs more work. Standardizing of cybersecurity regulations across global markets is still an issue of ensuring long term of success of contactless payments.

Theoretical Background: Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is a predominant framework that helps to understand

contactless payment systems adoption at emerging and developed markets. Davis (1989) introduced TAM which explains how technology adoption is accomplished by two major constructs namely, Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) (Ma & Liu, 2005). Users' attitudes and behavioral intentions for adopting a new technology are determined by these factors. Perceived Usefulness at contactless payments in reference to the number of users who believe that the technology improves transaction speed, security and convenience. Due to smooth interfacing with financial infrastructure in developed markets, where digital infrastructure is developed, PU is high. For instance, in emerging markets, PU may be subjected to hurdles including poor access to banking services, inconsistency in the regulation and fourthly, lower levels of digital literacy (Schorr, 2023).

Ease of use is perceived in how easy or how difficult users find it to use the technology. Hence, Perceived Ease of Use (PEOU) is projected to positively influence individuals' behavioral intention to adopt or utilize contactless payment systems. The greater the ease of use of the technology, the more likely it is to become the preferred payment method for customers when conducting transactions (Park, Manalili, Magtoto, Martinez, Solis, & Chua, 2022). Regions where contactless transactions are natural and easy are the ones with a higher PEOU and adoption. However, in emerging economies, technical difficulty, fraud fear and low levels of consumer awareness conspire against low use ease, thus reducing adoption rates (Fathema *et al*., 2015).

Furthermore, PU and PEOU are influenced by the adoption behaviors in different economic contexts such as factors of external nature including trust in digital transactions, regulatory environments and security measures (Marikyan & Papagiannidis, 2024). TAM is applied to this study in order to compare the adoption trends of contactless payment in developed and emerging markets, and to identify the distinctive variables that promote or obstruct acceptance. This is precisely the reason to understand these dynamics for fostering digital financial inclusion and sustainable growth of the global payment ecosystems.

MATERIALS AND METHODS

Search Strategy and Study Selection

A systematic Literature Review approach was adopted to analyze the adoption of contactless payments in emerging and developed markets. Academic databases such as Scopus, Google Scholar and PubMed were used in order to perform a rigorous search strategy in order to find relevant literature. The choice of these databases is due to their large coverage of peer-reviewed journal articles, conference papers, and industry reports. As the digital payments technology is evolving at a rapid rate, articles published between 2015 and 2025 were only included to capture the latest trends and developments. A combination of Boolean operators ("AND," "OR") was used to refine the search, incorporating key terms such as "contactless payments," "digital payment adoption," "NFC transactions," "financial inclusion," and "developed and emerging markets." To maintain consistency, only studies published in English were included. It also served to guarantee clarity in the interpretation and comparative assessment of findings in various economic settings. The study selection followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) flow strictly to ensure transparency and avoid selection bias. It consisted of four stages, namely identification, screening, eligibility, and inclusion. Initial searches in the identification stage produced a broad range of studies. At the screening stage, titles and abstracts of the articles were reviewed to exclude irrelevant articles. Second, full-text articles were evaluated in the eligibility stage in terms of their congruence to the research objectives and the methodological rigor.

Inclusion and Exclusion Criteria

The review was done to ensure its credibility, strict inclusion and exclusion criteria were applied. Studies had to be published from 2015 to 2025, specifically focus on contactless payment adoption, and provide insights into emerging or developed markets. To keep the evidence high, only peer reviewed journal articles, conference papers as well as authoritative industry reports were considered. On the other hand, studies that did not fit in the objectives of the study were excluded as they were the exclusion criteria. Papers focusing on digital banking or cashless policies, but without specific focus on contactless payments were excluded. Also removed were duplicate studies and articles that were without a clear methodological framework. The review applies these criteria to make sure that only good quality, relevant literature is used in the discussion.

Data Extraction and Thematic Analysis

Once the selection process ended, data extraction was done to extract key insights from each study. The data was extracted and it contained information about study design, geographical focus, technological aspects, regulatory considerations and barriers to adoption. Systematically organized, these insights were arranged so that they could be compared. Findings were synthesized through a thematic analysis approach that grouped them into main themes that were pertinent to contactless payment adoption. The method provides to identify recurring patterns and key driving the adoption trends in both emerging and developed markets. In later sections, results of the thematic analysis will be discussed with structured comparison of trends in adoption, barriers and enablers between different economic contexts.

RESULTS AND DISCUSSION

Adoption Drivers and Consumer Behavior in Digital Payments

Technological advancement, consumer trust, financial

inclusion and regulatory frameworks are driving forces for adoption of contactless payments. But adoption patterns are very different between developed and emerging markets. Strong financial infrastructure, consumer trust in banking systems and strict cybersecurity framework is the reason for rapid adoption of digital payments in developed economies (Bezhovski, 2016). Countries like the UK and Sweden have almost full adoption of mobile wallets and cards that can be used with NFC because there is already strong regulatory compliance plus easy integration into existing financial services. Loyalty programs, cashback offers and smart device compatibility are further incentives to adoption (Zehra *et al*., 2024). However, the digital payment adoption in emerging economies is predominantly necessity based as the underlying drivers include financial inclusion initiatives as well as the first mobile solutions. However, governments have an important role to play in fostering digital transactions, especially via low cost and easy available payment solutions such as QR code payments, which are now being used by small businesses and unbanked populations (Mohammed, 2025). The Unified Payments Interface (UPI) in India has had a great deal in bridging financial gaps, and thus play a significant role in economic participation (Mishra *et al*., 2024). Consumer behavior also varies significantly. With the Convention Kingcover, a transaction of 500 coins (representing one 'kieu') equates to T89K, or 89 standard new South Korean Banknotes, depending on the exchange rate for that day. This arrangement is used primarily in developed markets, where digital payments are used primarily for lifestyle convenience, particularly from younger generations that like embedded payment systems and existing spending practices (Demir *et al*., 2024). Factors such as smartphones' accessibility, the availability of internet and financial security contribute to digital transaction adoption (Kumar, 2024). Despite that, there still the cybersecurity factor that influences consumer trust: growing concern over unauthorized data access and privacy issues (Lathiya & Wang, 2021; Harkai, 2024).

In emerging markets, digital payments are a practical alternative to traditional banking, because of the lack of financial constraints and poor banking services. However, the infrastructural weaknesses prevent the widespread adoption of mobile wallets as they enable the shift from cash to digital transactions (Kumar, 2024). The high rates of transaction failures, unreliability of the network and fraudulent activities bring about high levels of consumer mistrust, slowing adoption (Oyewole *et al*., 2024). Nevertheless, it is expected that rising penetration of smartphones, financial literacy programs, and regulatory improvements will increase the velocity of digital payment adoption. A useful model for the analysis of the adoption trends is Technology Acceptance Model (TAM). The gain in PU and PEOU as well as the reduction in PAU for digital payments is greater in developed economies, where digital payments are fully embedded in the financial system, and is lower in emerging economies where digital literacy is low and regulation policies are not reliable (Schorr, 2023). As the adoption of digital transactions continues to grow, it is essential to address the need of digital transaction trust which is crucial for the adoption and hence targeted interventions should be made to build user confidence, especially in the case of emerging markets (Marikyan & Papagiannidis, 2024).

Challenges and Barriers to Digital Payment Adoption

While contactless payments offer a number of advantages, a few obstacles prevent its adoption in all markets, especially in the developing ones. These barriers are: security concerns; regulatory inconsistency; and infrastructure barrier. Major deterrents to cybersecurity threats are in both developed and emerging economies. The digital payment platform is a high target to be attacked with fraud, identity theft and financial data breach. However, until then, consumers are reluctant to embrace digital payments because they assume them to be insecure (Karim *et al*., 2022). In the matter of developed markets, regulations such as the Payment Services Directive 2 (PSD2) by the European Union forces multi factor authentication (MFA) and regardless of data protection standards, and so improves consumer trust (Putrevu & Mertzanis, 2023). However, such security measures may bring friction into the payment process and thus affect user experience. Because of their less regulation and lower technological literacy, emerging economies have more sever cybersecurity risks. These markets are especially susceptible to hackers who use fraud, phishing attacks and identity theft (Oyewole *et al*., 2024) to deceive users. High transaction failures and consumer distrust are caused due to lack of standardized cybersecurity protocols (Ahlawat & Gour, 2024). Generally due to lack of fraud prevention and poor dispute resolution, financial institutions are often unwilling to scale digital payment services. The main barrier to digital payment adoption that is seamless is its regulatory inconsistencies. Fintech regulations in developed economies are mostly well defined to protect consumers, prevent fraud and guarantee financial transparency (Ferrari, 2022). But critics insist that these regulations mostly behoove large fintech monopolies and may do if not stingy with competition.

On the other hand, emerging market suffers from regulatory gaps and discrete financial eco systems (Vijayagopal *et al*., 2024). This is due to enforcement challenges in countries like India, policy instability in Nigeria, thus rendering a trusted digital payment ecosystem for countries such as Nigeria (Muhammed *et al*., 2024). Lack of consistent regulations makes it difficult for the financial institutions to standardize digital payment security measures and this makes the rate of adoption very low. However, the adoption of digital payment requires reliable infrastructure. High speed internet, good banking services and free access

to smartphone enable developed nations to make seamless transactions. Nevertheless, infrastructure limitations have a huge impact on adoption rates in emerging economies (Mogaji & Nguyen, 2024). For instance, in Nigeria, the network coverage of the digital payment system in the transportation sector is weak and the consumer awareness is quite low (Muhammed *et al*., 2024). To address these barriers, governments and financial institutions need to invest in internet expansion, advancement of mobile banking and education for their consumers.

The Future of Digital Payments: Policy, Regulation, and Innovation

Technological advancements in the area of digital payments, regulatory policies regarding digital payments, and frameworks for consumer protection regarding digital payments are the indispensable factors to be considered to lay the foundation of digital payments' future. Nowadays, as digital payment systems are evolving, embedded finance is a progressive trend in which payment capabilities are embedded and integrated into non financial platform (e.g. e-commerce websites, social media applications, and ride-hailing services). Thus, it enables consumers to make frictionless instant transactions without reliance on traditional banking intermediaries. With embedded finance becoming a business staple, more and more companies are utilizing embedded finance to provide more personalized and easier payment experiences in various industries (Demir *et al*., 2024). Biometric authentication is a key technological innovation that will have an impact on the future of digital payments; it provides a more secure and less fraud occurrence. Fingerprint recognition, facial scans, voice authentication features are standard features that only authenticate and permit access to and execute digital transactions for only those who are authorized. As cybersecurity threats become more sophisticated, these are methods helping authenticate users for growing financial services adoption. Apart from that, the blockchain technology also offers a decentralized approach to the conduct of financial transactions, so as to minimize the risks that come from centralized control and fraudulent activities. The usage of blockchain brings in the transparency of transactions and the security of the data by enforcing the trust in digital payment system (Schorr, 2023). Apart from blockchain, various AI based fraud detection systems are equally important in combating cybersecurity attacks. These financial institutions use machine learning algorithms to detect patterns that are classical for fraudulent activities, identity theft and unauthorized transactions and respond to this in a real time system. With fraudsters becoming increasingly sophisticated in their approach, the security must keep up with the level of the game, making use of and deploying AI driven security mechanisms that continues to outsmart fraudsters in both manner and manner in stemming financial crimes related to payments on digital payment platforms. Despite the benefits offered by blockchain and AI based solutions, however, due to its guaranteed integrity, blockchain and AI based solutions will only become popular if adequate investment is made in digital infrastructure as well as in supporting regulations to guarantee ethical deployment as well as compliance with global security standards (Demir *et al*., 2024).

Both the security and the innovation in digital payments and also the financial inclusion will all be governed by a regulatory framework in the future and will not leave policymakers in a dilemma on how to balance these three competing forces. Regulators face the challenge of making international transactions consistent with one another, which complicates the cross border payment policy and also restricts international payment system interoperability. Also, the rise of fintech monopoly generates concern about its existence in order not to allow the decline of competition and possible limitation of access to cheaper digital payment solutions. Regulators need to implement policies which promote fair competition, data protection and consumer rights to counter these risks (Ferrari, 2022). Weak regulatory oversight will leave digital transactions with a higher tendency to be the subject of fraud, and this is something that is very concerning within emerging markets, as cybersecurity remains an important concern. To keep users from extending the threat from cyber, governments must impose tougher data encryption mandates, fraud prevention protocols, etc. Standardized regulations such as the Payment Services Directive 2 (PSD2) can help in digital payment security as well as interoperable and seamless transactions on a global level (Ballaji, 2024). One of the most important things that will help build trust and make certain that every user in the network, including those located in underserved regions, can safely and reliably transact digitally will be strengthening the dispute resolution mechanisms, fraud prevention platforms and financial literacy programs (Olipane & Inocencio, 2023). The development of a resilient, inclusive digital payment ecosystem that tapers off with dependence on the needs of both developed and emerging economies will need to take a collaborative approach of Government, financial institutions and technology providers.

Comparative Analysis of Contactless Payment Adoption in Developed and Emerging Economies

A comparative analysis of contactless payment adoption between developed and emerging economies reveals distinct trends, priorities, and challenges. Contactless payment systems are almost completely integrated into developed markets such as the UK, the US, the EU and Australia, and adoption rates are high. Robust financial infrastructure, stable internet connectivity and strong regulatory compliance are among the factors that lead economies to benefit from robust financial infrastructure, stable internet connectivity and strong

regulatory compliance will make these economies to be trusted and convenient to their users (Bezhovski, 2016). These regions are heavily invested in their financial institutions to have the latest and most advanced security frameworks, such as multi factor authentication (MFA) and encryption protocols, making it highly safe for the consumers to use this kind of banking. Secure payment practices such as those enforced by the European Union's Payment Services Directive 2 (PSD2) have allowed for transactions to remain seamless and efficient (Harkai, 2024). On the other hand, in markets that are emerging such as India, Nigeria and Brazil, contactless payments are also picking up rapidly but mostly out of necessity rather than convenience. There is a large number of people who are unbanked or underbanked and digital payments are a key way for financial inclusion. These governments in such economies have actively encouraged mobile payment solutions (Mishra, *et al*., 2024), for instance, Unified Payments Interface (UPI) in India has contributed significantly to the spurt in digital transactions providing a low cost and easy alternative to conventional banking. While these regions have critical security challenges including fraud, identity theft and weak enforcement of cybersecurity regulations (Oyewole *et al*., 2024), they face high barriers to adoption of smart technology due to the absence of a large middle class. Lack of standardized fraud detection system and inconsistent regulatory policies have contributed to the distrust of digital financial services by the consumers (Lathiya & Wang, 2021). There is also the factor of infrastructure inequalities that further widens the adoption gap between the developed and the developing markets. In developed economies, there is high speed internet, extensive banking network and advanced financial services, facilitating smooth digital transactions (Marikyan & Papagiannidis, 2024). However, contactless payment systems (Mohammed, 2025) cannot be broadly used in emerging economies with poor internet connectivity, unreliable mobile networks, and digital illiteracy. Barriers of this technology just lead to frequent transaction failures, depressing consumer confidence and slow adoption. Furthermore, whereas trust in financial institutions among consumers in developed markets is high, consumer trust in emerging markets is low due to fraud risks and unpredictability in service (Fathema *et al*., 2015). Both developed and emerging economies recognize the benefits of contactless payments, but the adoption of contactless payments is going to be very different. Efficiency, security, and compliance are the drive for developing markets, while financial inclusion, affordability and accessibility are driving forces for emerging markets. To bridge the global digital payment divide, cybersecurity threats must be addressed, digital literacy has to be improved and strengthened regulatory oversight in emerging economies will be key.

CONCLUSION

Successful adoption of contactless payments will greatly depend on a series of strategic collaborations of governments, banks and the fintech companies in tackling such issues as cybersecurity risks, compliance with the regulation and consumers' trust. Eliminating fraudulent and unreliable digital payments, or the certainty that your payments will be complete and received, is becoming a crucial issue for widespread adoption of payments via the web. With such conditions, our institutions can further project financial security by ensuring that end to end encryption, biometric authentication, and artificial intelligence driven fraud detection systems are part of their portfolio. Public–private partnerships are formulations of the standardized cybersecurity policies that will increase trust and transparency, as well as make our digital payment ecosystem more resilient. Coming to the point, regulatory harmonization is a critical factor for speeding up contactless payment adoption, given the region of the world and how fragmented policies frequently bring in stumbling blocks for smooth digital transactions. The use of PSD2 or other international payment standards helps the delivery of services in line with international payment standards such as PSD2 and it provides secure payments as well as facilitates cross border financial integration. The synergies between these alliances will lead to global guidelines for fintech firms to grow technology while protecting the consumers. In other words, strengthening financial regulations helps to build users' trust, and digital payment solutions remain secure, efficient and accessible to large communities of users equally in developed and developing countries. The other issues include security and regulation, and, most notably for developing regions, financial inclusion. In emerging markets, many people are not served by digital financial services, therefore, it is essential to develop digital literacy programs to enable users to make secure online transactions. To expand the role of mobile banking services and promote QR based payments, governments and financial institutions need to come up with initiatives which can propel the mobile banking services to include more people in the digital economy. Solving these barriers will help bring the adoption of contactless payment further and fill the gap between the Silicon Valley styled digital finance offerings of the developed world and the emerging world's digital finance landscape.

Recommendations

Success of contactless payments in the future will depend on strategic cooperation between the governments, financial institutions and fintech agencies to mitigate the risks of cybersecurity, regulatory compliance and trust by the consumers. However, to make widespread adoption of digital payments possible, these security frameworks need to be strong enough to fight fraud, breaches in the data and identity theft — acts that work against consumer confidence when it comes to the transactions. Institutions implementing end to end encryption with the use of biometric authentication and the deployment

of artificial intelligence driven fraud detection systems will be able to be assured of being financially safe. Public–private partnership will formulate standardized policies on cybersecurity in the payment ecosystem and increase trust and transparency, thereby making the payment ecosystem robust. Harmonization of regulatory remains a key component in the digitalisation adoption of contactless payment, especially in the emerging markets where common policies can act as a hindrance for the seamless digital transactions. As a means of delivering more security while reinforcing a degree of cross border financial integration, it supports international payment standards such as the European Union's Payment Services Directive 2 (PSD2). All this will lead to the creation of global regulatory alliances that provide uniform instructions for fintech firms in a manner that facilitates technological advancement while also ensuring strong consumer protection. In other words, strengthening financial regulations helps to build users' trust, and digital payment solutions remain secure, efficient and accessible to large communities of users equally in developed and developing countries. Security and regulation are just some of the reasons that financial inclusion continues to be an uphill battle; places that live in these rural areas that have little traditional banking infrastructure are no exception. Despite the many digital financial services available, many people in emerging markets are not able to access such services due to lack of digital literacy. To expand the role of mobile banking services and promote QR based payments, governments and financial institutions need to come up with initiatives which can propel the mobile banking services to include more people in the digital economy. These barriers need to be addressed to speed up adoption of contactless payment and plug the gap between the world of technology driven financial ecosystems in developed economies and growing digital finance landscape in emerging markets.

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